



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,205	08/14/2001	Michael R. Strommen	56640US002	1202

32692 7590 08/01/2003

3M INNOVATIVE PROPERTIES COMPANY  
PO BOX 33427  
ST. PAUL, MN 55133-3427

EXAMINER

TORRES VELAZQUEZ, NORCA LIZ

ART UNIT	PAPER NUMBER
----------	--------------

1771

10

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n No.

Applicant(s)

09/929,205

STROMMEN, MICHAEL R.

Examin r

Art Unit

Norca L. Torres-Velazquez

1771

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

a. The rejection of Claims 1-20 under 35 U.S.C. 103(a) over OGINO et al. in view of STOKES et al. and further in view of FUKUURA et al. and STOKES et al. have been withdrawn in view of Applicant's arguments indicating that the OGINO et al. reference is directed to a polyurethane foam substrate versus a web made of filaments as claimed herein.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 7-10 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN (US 3,971,373) in view of STOKES et al. (US 6,528,439 B1).

BRAUN discloses a self-supporting durable flexible conformable low-pressure-drop porous sheet product that contains a uniform three-dimensional arrangement of discrete solid particles. This sheet product comprises, in addition to the particles, a web of entangled melt-blown microfibers in which particles are uniformly dispersed. (Abstract)

The reference teaches that the sheet product of their invention has particles introduced into the gaseous stream carrying the microfibers and become intermixed with the microfibers. The particles are held within the web. BRAUN further discloses that the particles in their sheet

Art Unit: 1771

product are usually large enough to be physically entrapped within the interstices of the web. (Column 2, lines 19-41) It is noted that the BRAUN reference teaches the use of particles that vary in size and includes fine particles, having an average diameter less than the average interstitial space between the microfibers. (Refer to Column 5, lines 48-68 through Column 6, lines 1-10) The reference further teaches that the sheet products have low-pressure drops and other useful web properties including good durability. (Column 2, lines 59-60) The reference recognizes that the use of adhesives is known in the art. (Refer to Column 3, lines 16-22)

Further, the reference teaches that the microfibers in the web vary in size, generally having an average diameter between about 1 micrometer and 25 micrometers. (Column 6, lines 37-39) With regards to the claimed percent increase in pressure drop, these values are directly dependent on the thickness of the filter. BRAUN teaches that for most uses of sheet products of the invention, a thickness between 0.05 and 3 cm is used. For example, in respirators or facemasks, the thickness is generally about 0.05 to 1.5 centimeters, and where especially low-pressure drops are important, will preferably be less than about 0.3 cm. For certain applications, two or more separately formed particle-loaded webs may be assembled as one thicker sheet product of the invention. (Column 4, line 66 through Column 5, lines 1-6) Therefore, as regards to claims 17 and 18, values of 5 to 50 mm in the overall filter in view of the teachings of BRAUN would have been obvious to one of ordinary skill in the art, since the BRAUN reference teaches the use of two layers of the web. Further, the desired pressure drop of a filter is dependent on the intended use of the filter. It is well settled that determination of optimum values of cause effective variables such as increases in pressure drop of a filter is within the skill of one practicing the art. In re Boesch, 205 USPQ 215 (CCPA 1980).

BRAUN fails to teach that the support web is formed of substantially nonlinear filaments that randomly intersect.

STOKES et al. discloses crimped polymeric fibers and nonwoven webs and laminates made from the fibers. The reference teaches the use of their nonwoven webs in filter media since the webs made according to the STOKES et al. reference have improved loft characteristics with low pressure drop. (Abstract; Column 4, lines 22-65). The reference further teaches that the fibers can be spunbond fibers, meltblown fibers, or staple fibers. The fibers can be naturally crimped or mechanically crimped. (Column 5, lines 25-30)

Since both BRAUN and STOKES are directed to filter media, the purpose disclosed by STOKES would have been recognized in the pertinent art of BRAUN.

With regards to the open filter cells being random in size and orientation through the length and depth of the filter, these properties are inherent of porous sheets produced from melt-blown fibers.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the self-supporting durable flexible conformable low-pressure-drop porous sheet of BRAUN and provide it with a nonwoven web of crimped fibers to improve its fluid management properties and provide it with improved loft characteristics as disclosed by STOKES et al. (Column 4, lines 27-65).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN and STOKES et al. as applied to claim 1 above, and further in view of OGINO et al. (US 4,411,948).

While the BRAUN reference acknowledges the use of adhesives in the formation of filter materials of the present invention, it fails to particularly teach the use of methacrylate.

OGINO et al. discloses an air-cleaning filter element prepared by applying a pressure-sensitive adhesive agent to flexible webs and then applying an adsorbent material. (Abstract) The reference teaches that the adhesive agent employed may be of any type if it is able to secure the adsorbent in position. OGINO et al. teaches the use of pressure-sensitive adhesives and methacrylate. (Column 2, lines 20-62).

5. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRAUN and STOKES et al. as applied to claim 1 above, and further in view of VON BLUCHER et al. (US 4,906,263).

BRAUN and STOKES et al. fail to teach filaments with diameters between 0.05-2 mm and that the support web is a coiled support web formed from substantially continuous filaments. Also, the references above fail to teach that the support web has a pore size on average from 1 to 10 mm.

VON BLUCHER et al. discloses an adsorption filter that has a highly air-permeable, three-dimensional carrier framework to which a layer of granular adsorber particles with a diameter of 0.1 to 1 mm is affixed with the distance between the wires, monofilaments or stays being at least twice as great as the diameter of the adsorber particles. Preferably, it is approximately three to ten time as great. Accordingly, the openings or pores of the carrier framework have a diameter of 1 to 5 mm, preferably 1.5 to 2.5 mm. If the highly air-permeable, three-dimensional carrier framework, essentially stable in shape, is composed of monofilaments or threads of plastic, glass or liquefied minerals, the diameter is preferably 0.2 to 1mm. (Column 1, lines 42-59) The reference further teaches the use of a carrier framework consisting of plastic or wire spirals. (Column 2, lines 5-7)

Art Unit: 1771

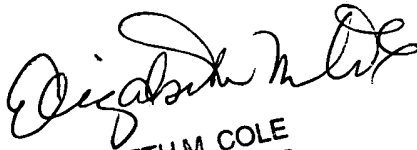
It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the filter sheet and provide it with a coiled structure with a the filament's diameter taught by VON BLUCHER et al with the motivation of creating an adsorption filter with low flow-through resistance and high adsorption performance as disclosed by VON BLUCHER et al. (Column 1, lines 37-41)

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 703-306-5714. The examiner can normally be reached on Monday-Thursday 8:00-4:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

nlt  
July 30, 2003

  
ELIZABETH M. COLE  
PRIMARY EXAMINER